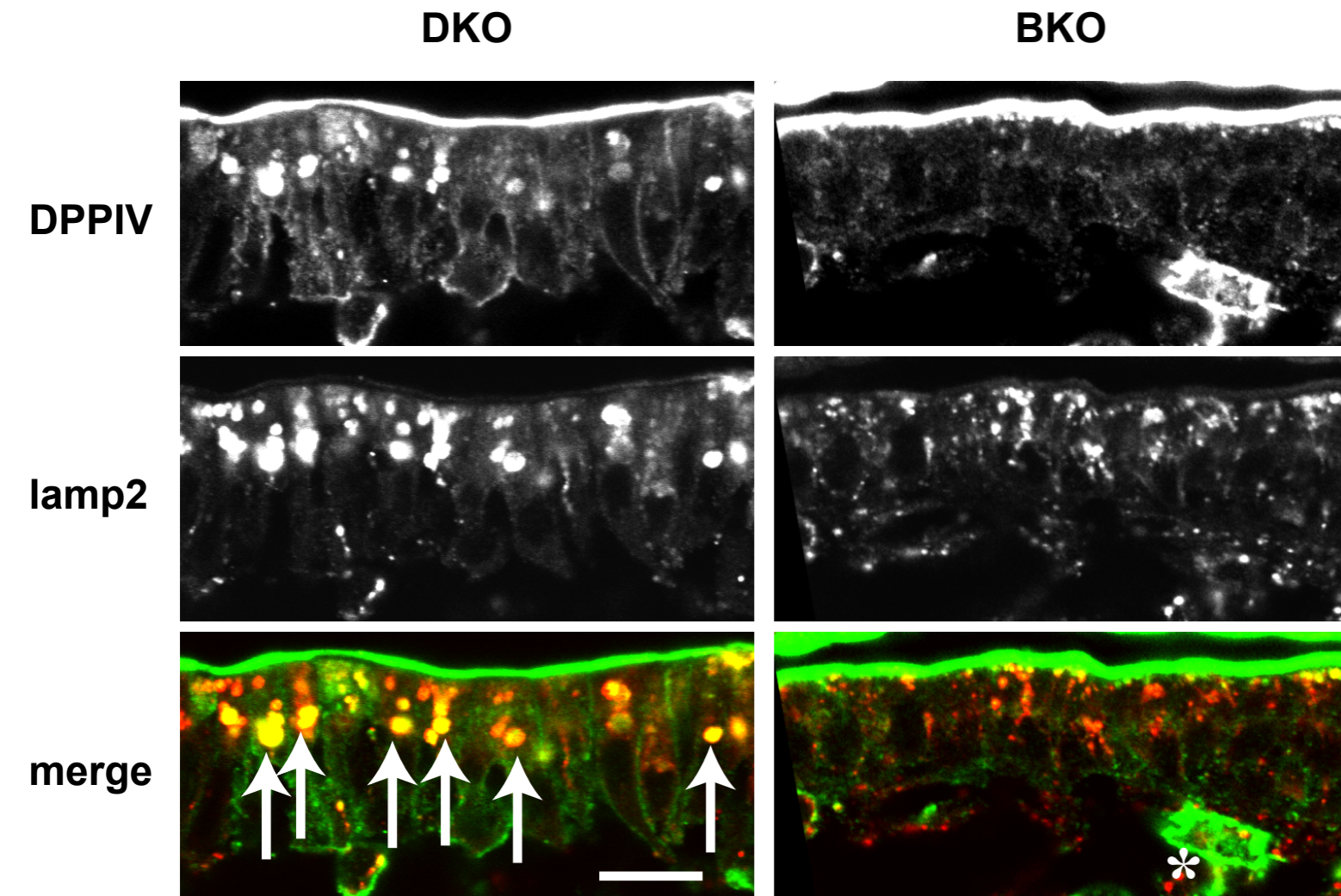


## Supplementary figure 1



**Fig. S1. Colocalization of an apical marker (DPPIV) and a lysosomal marker (lamp2) in the epithelial cells in the small intestine from P12 Rab8ab double knockout (DKO) mice.**

Large intracellular vacuoles of DPPIV colocalized with lamp2 are observed only in a villi of DKO intestine (arrows). Mesenchyme underneath the epithelial cells is stained in BKO (asterisk).

Bar, 20 $\mu$ m.

## Supplementary figure 2

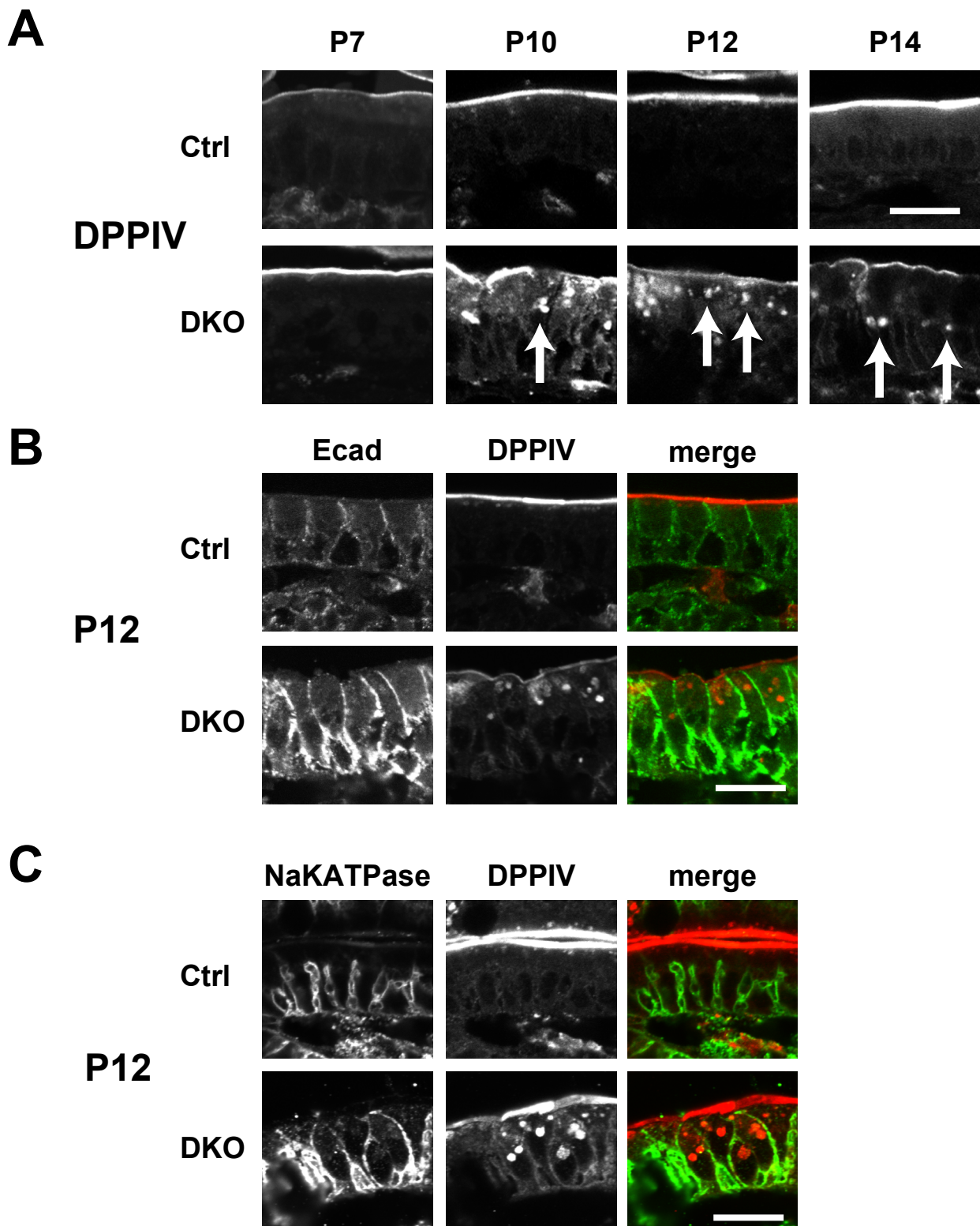


Fig. S2. Localization of an apical marker (DPPIV) and basolateral markers (E-cadherin and Na K ATPase) in the epithelial cells in the small intestine from control (Ctrl) and DKO mice. (A) Localization of DPPIV in control (Ctrl) and DKO mice at P7-P14. Intracellular vacuoles of DPPIV are shown by arrows. (B) Localization of E-cadherin (green) and DPPIV (red) at P12. (C) Localization of Na K ATPase (green) and DPPIV (red) at P12. Bars, 20 $\mu$ m.

## Supplementary figure 3

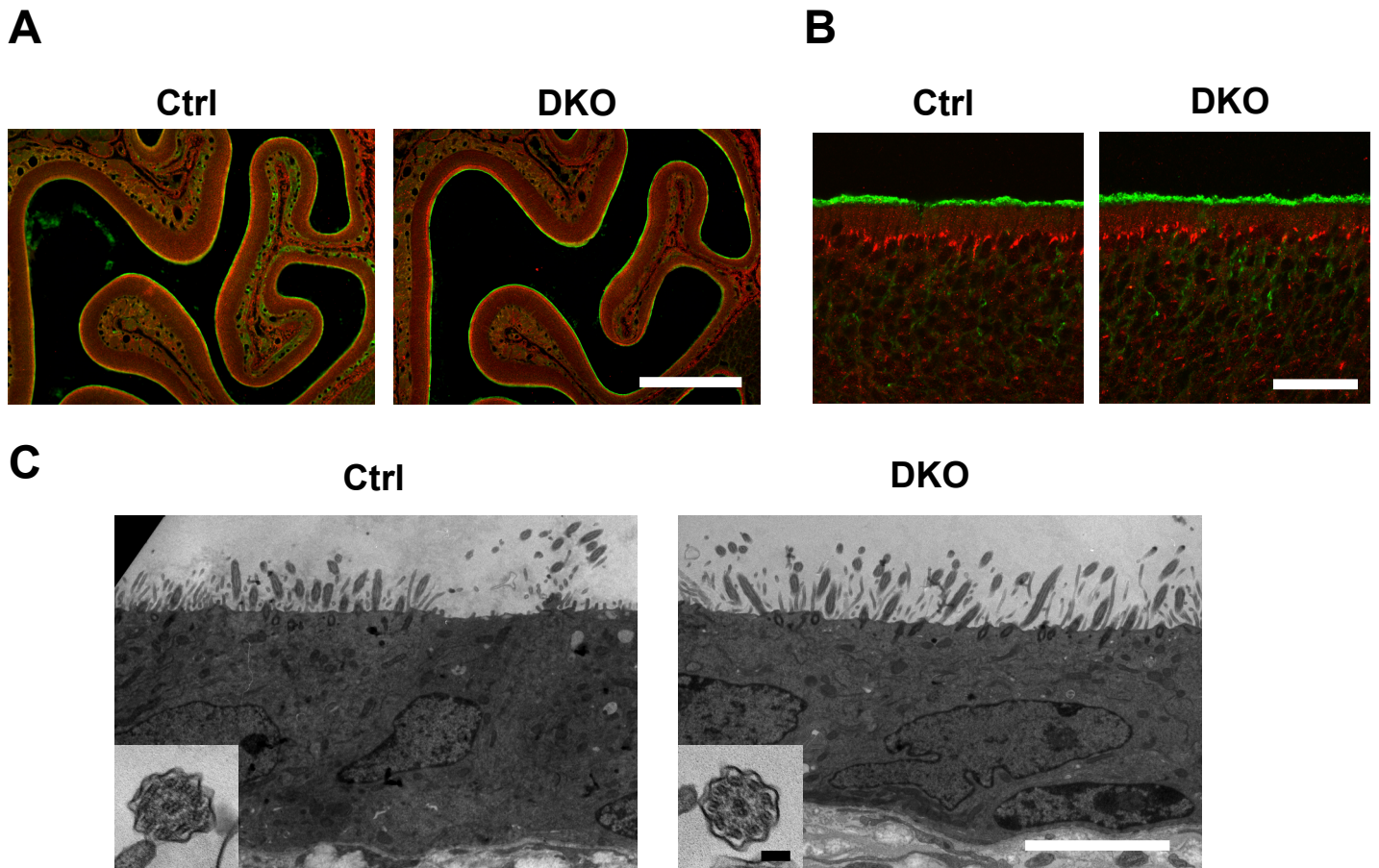
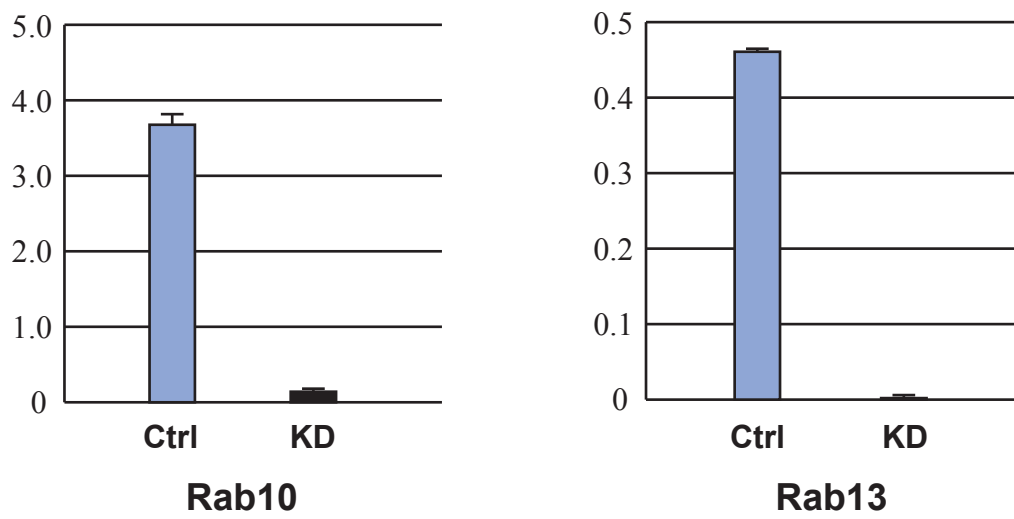


Fig. S3. **Morphology of primary and motile cilia.** (A) Morphology of nasal epithelium in control (Ctrl) and DKO mice at P14. Acetylated tubulin (green), golgin97 (red). Bar, 500 $\mu$ m. (B) High magnification of Figure S3A. Bar, 100 $\mu$ m (C) Electron micrographs of airway epithelial cells from P14 control (Ctrl) and DKO trachea. Cross sections of motile cilia were shown in the inset. Bars, 10 $\mu$ m and 0.2 $\mu$ m (inset).

## Supplementary figure 4



**Fig. S4. Knockdown efficiency measured by real-time PCR.**

The amounts of Rab10 (left) and Rab13 (right) mRNA are measured by real-time PCR. Both of them are greatly reduced after siRNA treatment.